Occupational stereotypes, gender segregation and job satisfaction

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Abstract

The literature in sociology and psychology shows that people have gender-specific stereotypes with regard to jobs and occupations. We argue that such stereotypes can affect individuals preferences and job utility. We investigate the relationship between occupational stereotypes and job satisfaction, using a unique representative data source with around 30000 observations to construct a measure of occupational stereotypes that indicates whether jobs are socially viewed as being stereotypically female or male. We demonstrate the existence of structural gender differences in the relationship between occupational stereotypes and job satisfaction. Women tend to report significantly lower satisfaction values in stereotypically female jobs but greater satisfaction with their income in those same jobs. Men tend to be more satisfied with stereotypically male jobs. We consider the endogeneity of an individual's job choice by instrumenting the individuals job choices with regional variance of gender specific jobs. We argue that our results are highly in line with recent theoretical work that incorporates the concept of identity into economic theory such as Akerlof and Kranton (2000) . First, our results extend the literature on gender-specific job satisfaction. Second, the results help to understand more about the mechanisms behind occupational segregation.

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1 Introduction

Despite the great strides towards gender equality in many western countries over the past 50 years, gender segregation remains persistent , with women crowded into lower-paid jobs with worse career prospectives (Johnson and Solon, 1996; Kidd and Goninon, 2000). While earlier literature links gender segregation to theories of employer discrimination, a more recent theory by Akerlof and Kranton (2000) links occupational segregation to gender-specific job stereotypes. Specifically, Akerlof and Kranton (2000) incorporate the sociological concept of identity into an economic framework. They propose a utility function in which identity is associated with different social categories and the ways in which people in these categories are expected to behave. In their model individuals suffer a utility loss if their action does not correspond to gender prescriptions for behavior. Akerlof and Kranton (2000) argue that people in occupations associated with the opposite sex often have ambiguous feelings about their work because they violate their own identity or that of their coworkers. Thus Akerlof and Kranton (2000) argue that gender segregation in the labor market might remain persistent because many people refuse to choose a job stereotypically associated with the opposite sex. In line with this theory, empirical studies in psychology find that individuals strongly stereotype occupations (McCauley and Thangavelu, 1991; Shinar, 1975; White and White, 2006). However, no evidence exists that occupational stereotypes affect the utility and preferences of individuals.

As identity and individual utility are usually impossible to measure, providing empirical evidence showing that occupational stereotypes influence individual utility is difficult. However, we argue that providing evidence on the relationship between self-reported job satisfaction and occupational stereotypes is a first step to more fully understanding how social influences affect gender-specific preferences in the labor market and why gender segregation remains persistent even in countries where women and men have equal rights. Therefore, to estimate the relationship between gender-specific stereotypes and job satisfaction, this paper follows and combines two kinds of empirical literature. First, we follow the economic literature on self-reported job satisfaction, which views self-reported job satisfaction as a sub-utility from working (Clark, 1997;

Clark and Oswald, 1996). Second, we extrapolate the strand of psychological literature that uses different kinds of indices to measure occupational stereotypes in the labor market (McCauley and Thangavelu, 1991; Shinar, 1975; White and White, 2006).

Fortunately, we have access to a unique data set that not only allows us to create an index for occupational stereotypes but also contains a variety of categorical job satisfaction measures. We use the German "BiBB/IAB Strukturerhebung," which contains data on 30,000 individuals and is representative for the German workforce. In addition to the job satisfaction measures, the data contains detailed information on each individual's job tasks and a variable that indicates whether the individual considers her or his job to be more appropriate for females or males. We use this information to create a conditional index indicating whether society on average associates each observed individual's job with female or male stereotypes. To our knowledge the BiBB/IAB survey is the only data set containing this kind of information.

Our results reveal structural gender differences in the correlations between occupational gender stereotypes and job satisfaction. They show that women report lower satisfaction values in stereotypically male jobs, an effect most pronounced in satisfaction with work climate and the contents of tasks. One notable exception is income satisfaction, for which women on average report higher values for stereotypically male jobs. In contrast, men report higher satisfaction values in stereotypically male jobs. These results are fairly stable, and we are able to confirm them for a variety of empirical specifications. The results remain robust when we control for unpleasant working conditions such as heavy lifting or night shifts which might predominate in male jobs.

The primary concern with our correlations is that individuals select themselves into female or male jobs for different reasons and are likely to be fairly different in terms of their tastes and abilities. Hypothetically women (men) in stereotypically male (female) jobs may be more likely to favor job characteristics in stereotypically male (female) jobs than women (men) in female (male) jobs. Therefore, pure correlations of the relationship between job satisfaction and occupational stereotypes are likely to underestimate the average effect of performing a job that is related to stereotypes associated with the opposite sex.

We overcome this endogeneity problem by applying an instrumental variable re-

gression. As an instrument we use our index for occupational stereotypes and calculate the average of this index for each individual's region of residence. We argue that any individual living in a region where stereotypically male jobs predominate is more likely to choose a stereotypically male job. Nonetheless, the predominance of stereotypically male jobs should not directly affect the individual's job satisfaction. Our IV estimates confirm our correlations, as we find that men report higher satisfaction values for all satisfaction dimensions in stereotypically male jobs than in stereotypically female jobs. Women, in contrast, report lower satisfaction values. However, when we consider the endogeneity of job choice, our standard errors increase substantially, and the effects remain significant only for satisfaction with work climate.

Our results show a relationship between occupational stereotypes and self-reported job satisfaction. Such a relationship might have far-reaching consequences for policy makers who wish to reduce gender-specific differences in the labor market. In particular, if stereotypes affect the job choice behavior of individuals, then labor market policies such as female quotas, anti-discrimination laws, or company policies aimed at facilitating the combination of work and family life might have little effect on reducing occupational segregation and the resultant gender wage gap.

The remainder of the paper is structured as follows. Section 2 presents a brief literature review. Section 3 presents the data set and the construction of our index for occupational stereotypes in detail, and section 4 describes the estimation methods. Section 5 presents the results, and section 6 both concludes and provides and discusses the results in the light of the economic literature.

2 Empirical literature

As we investigate the relation between job satisfaction and occupational stereotypes, this section presents a short overview of the economic literature on job satisfaction and the psychological literature on gender-specific occupational stereotypes.

2.1 Job satisfaction and gender.

A number of studies investigate the relationship between gender and job satisfaction (e.g. Clark and Oswald (1996), Sousa-Poza and Sousa-Poza (2000), Sloane and Williams (2000); Kaiser (2007)). Their overall finding is that in most western countries women appear more satisfied with their jobs than men, even when holding low-paying jobs with bad career prospectives. One explanation for this gender satisfaction paradox is that women favor different bundles of job characteristics than men. Thus job characteristics associated with women's jobs may appeal to them sufficiently to overcome income disparities and make women happier with their jobs than men. For example, Bender et al. (2005) and Asadullah and Fernández (2006) show that job characteristics such as work-time flexibility are more highly valued by women. Donohue and Heywood (2004) show that the job satisfaction of men correlates more strongly with income than the job satisfaction of women. Therefore, some of these researchers argue that gender segregation occurs simply because women and men favor different kinds of job characteristics. While such an explanation may to some extend be valid it may also fail to fully explain the underlying mechanisms of occupational segregation — as not all fields containing high percentages of females also have job characteristics such as work time flexibility or fewer working hours (e.g. nursing.).

However, a second explanation for the gender satisfaction paradox lies in the importance of expectations, i.e. those who expect less from their jobs will be more satisfied with their jobs. As Clark (1997)) argues women will be more satisfied than a man with the same objective characteristics if women expect less from their job. Indeed, (Clark (1997)) finds that women and men with similar expectations do not differ in their job satisfaction. However, none of these studies consider that gender-specific stereotypes might influence the job satisfaction and therefore the preferences of individuals.

2.2 Occupational stereotypes.

Thus so far the empirical economic literature has not focused on occupational stereotypes. However, a number of studies from sociologists and psychologists have investigated gender stereotypes: Shinar (1975), for example, shows that occupations with high

levels of competence, rationality, and assertion are viewed as masculine, whereas those with high levels of dependency, passivity, nurturance, and interpersonal warmth are perceived as feminine. White et al. (1998) produce similar results, showing that occupational stereotypes persist strongly among college graduates. Garrett et al. (1977) find strong tendencies of occupational stereotyping among children. O'Bryant and Corder-Bolz (1978) investigate the effect of television on children's stereotyping of women's work roles and show that young children learn stereotyping from television. In addition, McCauley and Thangavelu (1991)—using the US census—detect strong occupational stereotypes. More recent studies such as White and White (2006) show that occupational stereotyping persists even though the gender distribution within occupations have changed. For example, White and White (2006) show for the US, that the number of female accountants has not only risen but also recently exceeded the number of male accountants; nevertheless, accountants are still associated with a male stereotype.

3 Data

This section provides the details of the data and the measurement of our index for occupational stereotypes. For the entire investigation, we use the 1991/92 wave of the Qualification and Career Survey, carried out by the German Federal Institute for Vocational Training ("Bundesinstitut für Berufsbildung") and the Research Institute of the Federal Employment Service (Institut für Arbeitsmarkt- und Berufsforschung). To our knowledge, this wave of the Qualification and Career Survey is the only data set containing a variable that allows the construction of a variable for occupational gender stereotypes. The survey is a representative one percent sample of the German workforce, containing roughly 30,000 observations and a wide range of individual and workplace-related variables.

We restrict our sample to West German residents, for whom there were no missing values in our main variables of interest. This restriction leaves us with 11,660 observations for men and 7,336 observations for women. We choose this restriction because the fall of the Berlin wall in 1989 and the reunification of Germany in 1991 had negative influences on job satisfaction in East Germany, given the tremendous un-

certainty of East German workers about their ability to compete in the job market. As Frijters et al. (2004) show, job satisfaction in East Germany was exceptionally low in the years around 1991. The East German industrial sector in particular was badly affected by an economic downturn, with many people in the industry losing their jobs after reunification. As industrial jobs are linked to stereotypically male jobs, the consequences of the reunification might bias our estimates. Subsection 3.1 presents our dependent variables on job satisfaction, subsection 3.2 explains in detail how we construct or measure for gender specific stereotypes, and section 3.3 describes the control variables.

3.1 Dependent variables

Our dependent variables measure different dimensions of job satisfaction on a four-point scale ranging from being very unsatisfied to being very satisfied. We argue that such a job satisfaction measure is a valid indicator of an individual's job utility, covering all kinds of factors that are connected to that individual's job. The first variable measures general job satisfaction; the second, measures satisfaction with work climate; the third, satisfaction with the contents of tasks; and the fourth satisfaction with income. The exact questions are as follows[1]:

- *How satisfied are you with your occupational activity, considering every aspect of it?*
- *How satisfied are you with your occupational activity, considering the work climate?*
- *How satisfied are you with your occupational activity, considering the form and content of your tasks?*
- *How satisfied are you with your income?*

[1]Some economists worry about the reliability of these kinds of satisfaction measures. Nevertheless, psychologists use these measures widely. Therefore, as Clark and Oswald (1996) argue, we should interpret this use as validating the seriousness of these kinds of investigations. Moreover, these and similar kinds of research are finding increasing acceptance, even within economics (Frey and Stutzer, 2002).

Tables 1 and 2 present descriptive statistics for all satisfaction measures.

Table 1: Job satisfaction: Women

Satisfaction dimension	Overall	Work climate	Tasks	Income
Very unsatisfied	1.42	1.96	1.57	4.66
Unsatisfied	6.9	8	8.7	23.69
Satisfied	59.39	51.38	57.84	59.28
Very satisfied	32.29	38.66	31.9	12.36

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92. Columns contain percentages for men on 4-point Lickert scales.

Table 2: Job satisfaction: Men

Satisfaction dimension	Overall	Work climate	Tasks	Income
Very unsatisfied	0.93	1.8	0.81	2.41
Unsatisfied	5.45	8.87	6.99	18.83
Satisfied	63.35	56.08	61.8	65.59
Very satisfied	30.27	33.25	30.4	13.17

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92. Columns contain percentages for men on 4-point Lickert scales.

All measures show a reasonably typical picture for these kinds of satisfaction measures (see e.g., Blanchflower and Oswald, 2004). Most individuals report being either very satisfied or satisfied. However, a tendency exists for individuals to report lower satisfaction values for their income than for other dimensions of job satisfaction. Only 12 percent of the women and 13 percent of the men are very satisfied with their income. In contrast, 38 percent of the women and 33 percent of the men are very satisfied with their work climate. Women report the highest satisfaction category slightly more often than men. Only for income satisfaction do women report lower values.

Our variable of main interest is an index measuring the socially expected stereotype of a job. The next subsection describes in detail how we construct our stereotype index.

3.2 Explanatory variable: occupational stereotypes

In general, creating a valid measure for occupational stereotypes is fairly difficult. In particular, for large and representative data sets, information for creating such a measure is usually not available. Some psychological studies simply use the percentage of

females within a certain occupation. However, such an approach might be misleading, as perceived stereotypes might not follow these patterns.

Therefore, we propose calculating a conditional reference measure for occupational gender stereotypes. We argue that our measure displays the majority's gender-specific association of a job and is a valid measure for occupational stereotypes in the German population.

To calculate our index for gender-stereotyped occupations, we rely on a particular variable in our data set. One question asks individuals whether they think that their jobs can be performed only by men, only by women, or by both sexes equally[2]:

- *Can your job be performed equally by men and women if they have the same background?*

The possible answers are "only by a woman," "better by a woman," "equally by women and men," "better by a man" or "only by a man."

Table 3 presents descriptive statistics of this variable for women and men separately.

Table 3: Occupational sex stereotypes.

Gender:	male	female
only by woman	0.03	3.65
better by woman	0.18	13.31
by man and woman equally	60.28	82.73
better by man	23.61	0.26
only by man	15.89	0.05

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92. Columns contain percentages for men and women.

Not surprisingly, a fairly low percentage of men say that their own job could not be performed by a man or would be performed better by a woman. However, about 4 percent of all females say that their jobs could not be performed by a man at all, and about 13 percent believe that it would be better performed by a woman. In contrast, about 40 percent of all men report that their jobs could not be performed by women or performed as well by women.

[2]Similar measures are quite common in the psychological literature investigating the sexual stereotypes of occupations (White et al., 1998). However, most of these measures are conducted in small samples.

To describe the occupation of an individual, we use detailed information on the tasks that an individual performs. Participants were asked to mark on a list what kinds of tasks they have to perform in their jobs. We report the descriptive statistics on the task measures separately for women and men in the appendix. This information helps us to construct a valid measure for occupational stereotypes.

To create the index, we first run a regression of the following form:

$$p_i = T_i\lambda + \varepsilon_i \tag{1}$$

where p_i is the variable on gender job stereotypes which is 0 when the job is viewed as most appropriate for females and 4 if it is most appropriate for males. T_i is a vector containing a set of dummies for all of our task indicators. λ is the respective coefficient vector and ε the error term.

In Table 23 in the appendix we show the results of the regression according to equation 1. Table 23 shows that nearly all tasks enter highly significantly into the regression, indicating that tasks are a core determinant for occupational stereotypes. Tasks such as dealing with machines, driving vehicles, or supervising personnel show positive significant values, indicating that people on average view such tasks as stereotypically male. Tasks such as cleaning, care-giving, or teaching show negative significant coefficient values, indicating that people on average view such tasks as stereotypically female.

To construct our index, we obtain the predicted values from equation 1 ($P_i : \hat{p}_i = T_i\hat{\lambda}$). P_i will give us a proper indicator for occupational gender stereotypes persistent in society because the index measures the average occupational stereotype of an individual's job.

3.3 Control variables

In addition to our variables of main interest, our data set contains a variety of individual and job characteristics allowing us to control for influences on job satisfaction, influences not directly related to occupational stereotypes. We observe an individual's age in years, and we create a categorical variable for the worker's type of education. The first category of the education variable contains low-educated people such as those with

no university or apprenticeship degree. (Apprenticeship training in Germany combines on-the-job training and formal education. Around 60 percent of each cohort choose apprenticeship training. In contrast, university graduates compose about 20 percent, a small percentage in comparison to other Western countries.) The second category contains medium-educated people with an apprenticeship degree, and the third contains high-educated people with a university degree.

In addition, we observe weekly working hours and monthly income, which we observe in 16 categories. We assign midpoints to these income categories and treat the variable as continuous, as DiNardo and Pischke (1997) did when using this data. We are also able to observe certain job characteristics, not usually observable in most data sets. We know whether a worker carries or lifts heavy weights, works in wet and cold or smoky and dusty/dirty/noisy surroundings, and whether she or he works in unhealthy physical positions or works night shifts. These control variables are likely to strongly correlate with a person's job satisfaction, and our results bear out this assumption. Descriptive statistics on all the variables appear in the appendix.

4 Estimation strategy

This section presents our estimation strategy. A number of studies such as Clark and Oswald (1996), consider job satisfaction as a type of sub-utility function u representing utility from working in an overall utility function $v = v(u,\mu)$, where μ is utility from other areas of life. The utility from working is usually considered to be of the form:

$$u_i = u_i(w,h,i,j) \tag{2}$$

where w is income, h is hours of work, and i and j are sets of individual and job-specific characteristics. We extend this utility function by a parameter P, which represents the occupational specific stereotypes of an individual's job.

$$u_i = u_i(w,h,i,j,P) \tag{3}$$

Therefore, equation (2) gives us a natural starting point for applying the following regression equation:

$$JS_i^* = \beta_0 + \beta_1 P_i + \beta_2 w_i + \beta_3 h_i + X_i'\gamma + \varepsilon_i \tag{4}$$

JS_i^* is a latent variable that indicates the job satisfaction of individual i. P_i represents our index for gender stereotypes. Bigger values of P_i that are closer to a value of 4 indicate stereotypically male jobs, and lower values of P_i that are closer to a value of 0 indicate stereotypically female jobs. w_i refers to an individual's monthly income, and h_i represents the weekly working hours. X_i contains a broad set of control variables for personal and job characteristics. Our coefficient of main interest is β_1, which measures the effect of being in a stereotypically male or female job. We estimate equation (4) separately for males and females. A positive value of β_1 indicates that both females and males report higher satisfaction values for stereotypically male jobs. A negative value of β_1 indicates that both females and males report lower satisfaction values for stereotypically male jobs.

As JS_i^* is not observable, we follow the literature by assuming the following relationship:

$$JS_i = \begin{cases} 1 & \text{if } JS_{i_i}^* < \alpha_1 \\ 2 & \text{if } \alpha_1 \leq JS_{i_i}^* < \alpha_2 \\ 3 & \text{if } \alpha_2 \leq JS_{i_i}^* < \alpha_3 \\ 4 & \text{if } \alpha_3 \leq JS_{i_i}^* \end{cases}$$

JS_i is a 4-point Lickert scale index that indicates the satisfaction of individual i, and α_i represents cut parameters which we then estimate. As ε_i is assumed to be normally distributed, we apply an ordered probit model.

Thus far equation (4) does not take into account that individuals are not randomly assigned to their jobs but instead choose them according to their preferences, their abilities, and their employer's hiring decisions. Individuals who perform jobs associated with stereotypes of the opposite sex are either likely to favor those jobs or are able to deal with the potential negative consequences arising from gender-specific stereotyping. Thus β_1 is likely to underestimate the true average effect of occupational stereotypes on the individual's job satisfaction. We handle this problem by using an

instrumental variable approach. We estimate the following equation in the first stage.

$$P_i = \delta_0 + \delta_1 Z_i + X_i'\varphi + u_i \tag{5}$$

Equation (5) models the self-selection alongside the ordered probit model. Again, P_i is the index for occupational stereotypes. X_i contains the same set of variables such as in (4). Z_i is a instrumental variable that we assume to be correlated with P_i but not with ε_i.

As an instrument we use the mean of P_i calculated at the state level of the individuals residence. The logic is as follows: If an individual lives in a state with a high percentage of stereotypically male jobs, she or he is more likely to choose a stereotypically male job, In particularly because individuals in Germany are much less mobile than in the U.S. and often choose a job in their region of residence. However, the percentage of stereotypically male jobs in an individual's region should not directly affect the individuals job satisfaction. German states have a high variation in their industry and urbanization. Some states constitute only a large city such as Berlin, where urbanization is quite high and where service jobs, which are usually considered stereotypically female, predominate. Other states cover several cities and larger regions, where the agricultural sector and industries such as coal mining, which are more likely to be perceived as stereotypically male, predominate. For the purpose of our study we calculate the mean of P_i in each state separately for women and men.

We are aware that such an instrument does not mimic a fully exogenous randomization of an individual's job choice. Instead, our instrument rather identifies a restriction in job choices for a particular sub-population. Therefore, we are able to identify only a local average treatment (LATE) for a particular sub population (Imbens and Angrist, 1994). Finding an instrument or a natural experiment that identifies a true randomization for an individuals job choice is practically impossible for the data at hand. However, we argue that the LATE offers important insights still as we are able to identify a sub-population of individuals who did not choose their jobs according to their preferences but rather because the job was available within the individual's region. Such individuals are far less likely to choose their jobs because they have extensive prefer-

ences for stereotypically female or male jobs[3].

We estimate our regression in a two-stage procedure similar to the two-stage conditional maximum likelihood approach proposed by Rivers and Vuong (1988). First, we obtain $\hat{u}_i = P_i - Z_i'\hat{\delta}$ from equation (5). Second, we estimate the following regression with an ordered probit model.

$$JS_i^* = \beta_0 + \beta_1 P_i + \beta_2 w_i + \beta_3 h_i + X_i'\gamma + \theta\hat{u}_i + \varepsilon_i \tag{6}$$

Equation (6) is similar to equation (4) but additionally contains the regressors $\hat{u}_i$. θ is referred to as the additional coefficient of $\hat{u}_i$. A useful feature of this procedure is that the z-statistics of θ serves as a test for the exogeneiety of P_i. The null hypothesis that P_i is exogenous has to be rejected if $\theta \neq 0$. However, obtaining the standard errors from such a procedure directly leads to misleading conclusions, as the naive standard errors do not take into account that the first stage is estimated with bias. Thus we adjust the errors according to Murphy and Topel (1985), who derive the standard errors for an IV probit estimator with a continuous endogenous regressor. We extend their approach to an IV ordered probit regression with a continuous endogenous regressor.

5 Results

This section presents the regression results in detail, first giving the descriptive statistics, and, second the results for the ordered probit regression. Third, we present the results of our 2SCML IV approach, and fourth, we present some robustness checks.

5.1 Descriptive statistics

Table 4 provides some descriptives statistics for P_i, our index for occupational stereotypes, to determine how occupational stereotypes are distributed across the observed population. If P_i is closer to 4, the value indicates that the job is associated with a more male stereotype. If P_i is closer to 0, then the job is associated with a more female

[3]There is extensive discussion in the literature about the use and interpretation of the LATE (Imbens, 2010).

stereotype. The first row of the table shows an average of P_i for men of about 2.40 and a variance of about 0.38. For women the respective values are 2.03 and 0.26. Thus the results show that men work significantly more often in stereotypically male jobs and indicate a tendency of occupational segregation along the lines of occupational stereotypes. But the variance of P_i is bigger for men than for women, meaning that men work in a broader range of jobs than women.

Table 4: Index: Stereotype P

Gender:	Mean	Std. Dev.
Women	2.03	0.26
Men	2.41	0.38
Education:	Mean	Std. Dev.
Low	2.25	0.38
Middle	2.30	0.40
High	2.11	0.27

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
Predicted values from an OLS regression of occ. sex stereotypes on tasks.

The second part of the table shows the means and standard deviations for the three educational groups. For all three groups we find a mean slightly above 2. For university graduates the table shows the lowest mean of about 2.11 and the smallest standard deviation of about 0.27. The tendency towards stereotypically male jobs is most pronounced among apprenticeship graduates, who account for the biggest percentage of the German work force. However, apprenticeship graduates also have the biggest variance for occupational stereotypes. Such a result is not surprising because apprenticeship graduates are most likely to hold a broad range of jobs. The apprenticeship degree qualifies its recipients for stereotypically female jobs such as service jobs and for stereotypically male jobs such as blue-collar jobs.

Table 5 and 6 show means and standard deviations of our index for occupational stereotypes P_i by satisfaction levels for women and men. Table 5 shows the results for women. The index is with 2.07 highest for women who are very unsatisfied with their overall job satisfaction. The table shows a similar result for satisfaction with work climate and satisfaction of tasks. The average of P_i is 2.06 for women who are very unsatisfied with their work climate and 2.08 for women who are very unsatisfied with

the contents of their tasks. The only exception is income satisfaction, where the mean of P_i is with 2.05. Thus the pure descriptive results indicate that women who work in stereotypically male jobs are more satisfied with their income but less satisfied with their overall satisfaction, with their work climate and their contents of tasks.

Table 5: Stereotypes by satisfaction categories: women

Satisfaction dimension	Overall	Work climate	Tasks	Income
Very unsatisfied	2.07	2.06	2.08	1.98
Unsatisfied	2.03	2.04	2.05	2.02
Satisfied	2.04	2.04	2.04	2.04
Very satisfied	2.03	2.02	2.02	2.05

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
Columns contain means of P_i for each satisfaction category.

Table 6 shows the results for men. The evidence for men does not show such a clear picture. We find a tendency that men who report lower values for overall satisfaction, satisfaction with tasks, and satisfaction with income are more likely to work in stereotypically male jobs. Only men who report being very satisfied with their work climate work are slightly more often in stereotypically male jobs.

Table 6: Stereotypes by satisfaction categories: men

Satisfaction dimension	Overall	Work climate	Tasks	Income
Very unsatisfied	2.37	2.38	2.44	2.39
Unsatisfied	2.44	2.39	2.43	2.43
Satisfied	2.42	2.41	2.43	2.41
Very satisfied	2.36	2.41	2.36	2.38

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
Columns contain means of P_i for each satisfaction category.

The next section presents the multivariate analysis.

5.2 Ordered probit estimates

Table 7 provides the estimates of equation (4)—the simple ordered probit regression of the relation between stereotypes and job satisfaction for women and men. The dependent variables are our four satisfaction measures: overall job satisfaction, satisfaction with work climate, satisfaction with the contents of tasks, and satisfaction with income.

Our main variable of interest is P_i, our index for gender-specific stereotypes. A positive value of β_1 indicates that the probability of being in the highest satisfaction category rises while the probability of being in the lowest category decreases.

Table 7 presents the estimates for women, with additional controls typically included in studies on job satisfaction. Before we discuss the effect of occupational stereotypes, we show that the control variables yield results in line with previous literature. Income has a positive significant effect on overall job satisfaction, satisfaction with the contents of tasks, and income satisfaction. This result is in line with the literature on job satisfaction (Clark, 1997; Clark and Oswald, 1996; Frijters et al., 2004). In contrast, the satisfaction with work climate decreases for women with a higher income. As more competitive environments are likely to yield higher income, this result is in line with recent findings that women face disadvantages under strong competition (Gneezy et al., 2003). Job satisfaction decreases with age at a decreasing rate. The coefficients on age and age-squared show the typical U-shaped pattern found in the former literature. However, the coefficients are not significant at the 10 percent level. Weekly working hours shows the typical negative effect on job satisfaction. In contrast to some previous findings, individuals with higher education report higher job satisfaction values. Nevertheless, other studies such as Blanchflower and Oswald (2004) find the same positive significant effect for education.

Table 7: Job satisfaction and occupational stereotypes: women

Dependent variables:	Overall	Work climate	Tasks	Income
Index: Stereotypes P	-0.047	-0.127**	-0.209***	0.241***
	(0.052)	(0.051)	(0.051)	(0.053)
Ref.: Low education				
Medium education	0.255***	0.147***	0.325***	0.056*
	(0.032)	(0.031)	(0.032)	(0.031)
High education	0.290***	0.116**	0.449***	-0.006
	(0.048)	(0.046)	(0.048)	(0.047)
Age in years	-1.070	-0.635	0.351	-0.329
	(0.861)	(0.841)	(0.834)	(0.836)
Age squared	1.450	0.407	-0.167	1.026
	(1.038)	(1.020)	(1.008)	(1.011)
Monthly income/100	0.013***	-0.003*	0.012***	0.025***
	(0.002)	(0.001)	(0.002)	(0.002)
Weekly working hours	-0.008***	-0.004**	-0.001	-0.017***
	(0.002)	(0.002)	(0.002)	(0.002)
N	7336	7336	7336	7336

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
The dependent variables are 4-point Lickert scales on 4 job satisfaction dimensions.
Robust standard errors are used. Standard errors under coefficients.
* Denotes significant at 10 percent level.
** Denotes significant at 5 percent level.
*** Denotes significant at 1 percent level.

The effect of main interest is the indicator for occupational stereotypes. The sign of P_i is negative for overall satisfaction, satisfaction with work climate and satisfaction with contents of tasks. For satisfaction with income the effect is positive, even if we control for monthly income. While for overall satisfaction the effect is not significant at the 10 percent level, we find well-defined effects with small standard errors for the other satisfaction categories. Therefore, our results support the descriptive statistics section 3.1

As our index does not provide a natural way of interpreting the effect in terms of marginal effects, we show predicted probabilities for two sample jobs. The first job F is stereotypically female and the second job M is stereotypically male. The stereotypically female job F contains the following tasks: preparing food, serving and accom-

modating, cleaning, disposing of garbage, buying and selling, writing, teaching, and care-taking. According to our index job F, has a value of $P_i = 0.95$. The stereotypically male job M contains the following tasks: repairing, driving, and working on buildings. M has an index value of about $P_i = 3.5$. We hold all other control variables constant at the mean.

Table 8 provides the predicted probabilities for being very satisfied for both jobs. We estimate for the stereotypically female job F a probability of about 34 percent of being very satisfied for overall job satisfaction. A women who performs the stereotypically male job has only a 29 percent probabilty of being very satisfied overall. This amounts to a 4 percent decrease in the probability of being very satisfied with overall satisfaction. For the satisfaction with work climate the decrease is 12 per cent and for satisfaction with the contents of tasks the decrease is 18 per cent. Thus for both categories the decrease is even bigger than for overall satisfaction. Only for the satisfaction with income does the effect go in the opposite direction and we estimate a 12 percent increase in the probability of a woman being very satisfied in the stereotypically male job rather than in the stereotypically female job.

Table 8: Predicted probability of being very satisfied: women I

Dependent variables:	Overall	Work climate	Tasks	Income
No controls for working conditions.				
Stereotypically female job (F):	0.34	0.43	0.39	0.07
Stereotypically male job (M):	0.29	0.31	0.21	0.19
Controls for working conditions.				
Stereotypically female job (F):	0.32	0.43	0.37	0.07
Stereotypically male job (M):	0.32	0.32	0.23	0.19

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
The dependent variables are 4-point Lickert scales on 4 job satisfaction dimensions.

One argument that our results are not caused by gender stereotyping is that male jobs are characterized by challenging physical working conditions (e.g. heavy lifting) that have a strong effect on women's job satisfaction. In other words, the negative

effect of performing a stereotypically male job might arise only because women find such working conditions unpleasant. Fortunately, we have detailed information on such working conditions and can control for those influences. Table 9 presents the results for the coefficients and shows no major differences with respect to sign and significance level. Table 8 shows the predicted probabilities of being very satisfied. The differences between the stereotypically female and the stereotypically male job vanish for overall satisfaction. For satisfaction with work climate, we estimate a 12 percent decrease; for satisfaction with contents of tasks, we estimate a 14 percent decrease; and for income satisfaction, we estimate a 12 per cent increase. As the results remain quite stable when we include controls for unpleasant work characteristics, we conclude that those characteristics are not driving our results substantially.

Table 9: Job satisfaction and occupational stereotypes: women II

Dependent variables:	Overall	Work climate	Tasks	Income
Index: Stereotypes *P*	-0.003	-0.101*	-0.149***	0.243***
	(0.054)	(0.052)	(0.053)	(0.054)
Ref.: Low education				
Medium education	0.215***	0.114***	0.289***	0.028
	(0.032)	(0.031)	(0.032)	(0.031)
High education	0.268***	0.097**	0.429***	-0.022
	(0.049)	(0.046)	(0.048)	(0.047)
Age in years	-0.873	-0.483	0.510	-0.160
	(0.867)	(0.844)	(0.834)	(0.838)
Age squared	1.175	0.181	-0.390	0.800
	(1.047)	(1.024)	(1.009)	(1.012)
Monthly income/100	0.012***	-0.004***	0.011***	0.024***
	(0.002)	(0.001)	(0.002)	(0.002)
Weekly working hours	-0.006***	-0.002	0.001	-0.015***
	(0.002)	(0.002)	(0.002)	(0.002)
Heavy weight	-0.097**	-0.089*	0.002	-0.237***
	(0.047)	(0.045)	(0.044)	(0.046)
Smoke, dust, noise and cold	-0.257***	-0.186***	-0.268***	-0.129***
	(0.036)	(0.035)	(0.035)	(0.035)
Night-/shiftwork	-0.159***	-0.163***	-0.135***	-0.084**
	(0.038)	(0.037)	(0.038)	(0.037)
N	7336	7336	7336	7336

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
The dependent variables are 4 point lickert scales on 4 job satisfaction dimensions.
Robust standard errors are used. Standard errors under coefficients.
* Denotes significant at 10 percent level.
** Denotes significant at 5 percent level.
*** Denotes significant at 1 percent level.

Unfortunately, we do not know how many men work with the observed women. Thus determining whether the effect stems from stereotyping or from the possibility that women do not like to work with men, even in a female job is difficult. We try to overcome this problem by estimating the share of men for each individual's job. In particular we estimate a linear probability model with a gender dummy as dependent variable and the tasks as explanatory variables. We then incorporate the predicted

values from that regression into equation (4) as an additional control variable.

Table 10 presents the results for women. It shows negative coefficient values for P_i with respect to overall satisfaction, satisfaction with work climate, and satisfaction with contents of tasks. It also shows a positive effect for income satisfaction. The effect is statistically significant for overall satisfaction and satisfaction with contents of tasks. For work climate we estimate a very similar coefficient value as in Table 9, but the standard errors become somewhat bigger. The newly incorporated variable "percentage of males" is positive significant for overall satisfaction, satisfaction with contents of tasks, and income satisfaction. The effect is negative but not significant for the satisfaction with work climate. Therefore, these results confirm, at least qualitatively, the results in Table 9 . However, we are aware that multicollinearity might bias the results of Table 10 and even turn the coefficient signs in the wrong direction, as P_i and the estimated percentage of males within each job are highly correlated—the correlation of both variables is about 0.81. Therefore, we emphasize that the results in Table 10 must be carefully interpreted.

Table 10: Job satisfaction and occupational stereotypes: women III

Dependent variables:	Overall	Work climate	Tasks	Income
Index: Stereotypes *P*	-0.364***	-0.101	-0.660***	0.051
	(0.090)	(0.088)	(0.090)	(0.092)
Percentage of males	0.537***	-0.001	0.757***	0.285***
	(0.108)	(0.106)	(0.108)	(0.106)
Ref.: Low education				
Medium education	0.209***	0.114***	0.280***	0.025
	(0.032)	(0.031)	(0.032)	(0.031)
High education	0.237***	0.098**	0.386***	-0.039
	(0.049)	(0.046)	(0.049)	(0.047)
Age in years	-1.033	-0.483	0.290	-0.248
	(0.873)	(0.845)	(0.840)	(0.838)
Age squared	1.413	0.181	-0.060	0.932
	(1.055)	(1.026)	(1.017)	(1.013)
Monthly income/100	0.010***	-0.004**	0.008***	0.022***
	(0.002)	(0.002)	(0.002)	(0.002)
Weekly working hours	-0.006***	-0.002	0.002	-0.015***
	(0.002)	(0.002)	(0.002)	(0.002)
Heavy weight	-0.089*	-0.089*	0.014	-0.233***
	(0.047)	(0.045)	(0.044)	(0.046)
Smoke, dust, noise, and cold	-0.267***	-0.186***	-0.283***	-0.135***
	(0.036)	(0.035)	(0.035)	(0.035)
Night-/shiftwork	-0.136***	-0.164***	-0.104***	-0.073*
	(0.038)	(0.037)	(0.038)	(0.037)
N	7336	7336	7336	7336

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
The dependent variables are 4-point Lickert scales on 4 job satisfaction dimensions.
Robust standard errors are used. Standard errors under coefficients.
* Denotes significant at 10 percent level.
** Denotes significant at 5 percent level.
*** Denotes significant at 1 percent level.

Table 11 presents the first ordered probit results for men. As we did with women, we look first at the control variables, finding three main differences between the results for men and women. First, age enters the regression as highly significant for satisfaction with work climate, the contents of tasks, and income satisfaction. Second, income

shows a positive effect on all satisfaction measures, including work climate. This result is in line with former evidence showing that men suffer less from competition, which is more likely to occur in well-paid positions. Third, the weekly working hours show no effect or a positive significant effect on satisfaction with the contents of tasks. Such a result might occur because men on average do not differ substantially in their working hours. Men might also put less value on work-time flexibility and therefore remain unaffected by long working hours.

The effect of the main variable of interest P_i shows a more heterogeneous picture than in the case of women. We find a negative significant effect on overall satisfaction and no statistical significant effect for satisfaction with work climate or the contents of tasks. However, in line with the women's results, the effect is positive and significant for income satisfaction. Thus far, the multivariate estimates mimic the descriptive results.

Table 11: Job satisfaction and occupational stereotypes: men I

Dependent variables:	Overall	Work climate	Tasks	Income
Index: Stereotypes P	-0.094***	0.041	-0.048	0.116***
	(0.031)	(0.030)	(0.031)	(0.031)
Ref.: Low education				
Medium education	0.249***	0.081***	0.295***	0.054*
	(0.031)	(0.030)	(0.031)	(0.031)
High education	0.276***	0.051	0.346***	-0.042
	(0.043)	(0.041)	(0.043)	(0.042)
Age in years	-1.089	-3.269***	-1.475**	-2.436***
	(0.754)	(0.723)	(0.748)	(0.733)
Age squared	1.245	3.527***	1.817**	3.241***
	(0.880)	(0.843)	(0.870)	(0.853)
Monthly income/100	0.013***	0.002*	0.015***	0.025***
	(0.001)	(0.001)	(0.001)	(0.001)
Weekly working hours	0.001	-0.000	0.006***	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)
N	11660	11660	11660	11660

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
The dependent variables are 4-point Lickert scales on 4 job satisfaction dimensions.
Robust standard errors are used. Standard errors under coefficients.
* Denotes significant at 10 percent level.
** Denotes significant at 5 percent level.
*** Denotes significant at 1 percent level.

Table 12 reports the predicted probabilities for men holding the sample stereotypically female job F and for men holding the stereotypically male job M. For men we estimate an 8 percent decrease for overall satisfaction when switching from the female job F to the male job M. We estimate a 3 percent increase for satisfaction with work climate, a 4 percent decrease for satisfaction with contents of tasks, and a 6 percent increase for income satisfaction. Thus our results show an even bigger negative effect of P_i on men's overall satisfaction than on women's. However, the negative effect for the satisfaction with contents of tasks is much bigger for women and the effect on work climate is even positive, although insignificant.

Table 12: Predicted probability of being very satisfied: men

Dependent variables:	Overall	Work climate	Tasks	Income
No controls for working conditions.				
Stereotypically female job (F):	0.34	0.31	0.32	0.09
Stereotypically male job (M):	0.26	0.34	0.28	0.15
Controls for working conditions.				
Stereotypically female job (F):	0.26	0.25	0.25	0.07
Stereotypically male job (M):	0.33	0.40	0.33	0.17

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
The dependent variables are 4-point Lickert scales on 4 job satisfaction dimensions.

Table 13 adds further controls for unpleasant working conditions for men. In contrast to the women's results, those for men change substantially when we include the variables for unpleasant working conditions. All coefficients turn positive and highly significant. As we show in Table 12, the now positive effects are substantial. For overall satisfaction, we estimate a 6 percentage increase. For satisfaction with work climate, we estimate a 14 percent increase. For satisfaction with contents of tasks, we estimate an 8 percent increase, and for income satisfaction we estimate a 10 percent increase. In contrast to the estimation results for women the results for men are strongly driven by unpleasant working conditions, and when we control for such conditions, men report even higher satisfaction values in stereotypically male jobs than in stereotypically female jobs.

Table 13: Job satisfaction and occupational stereotypes: men II

Dependent variables:	Overall	Work climate	Tasks	Income
Index: Stereotypes P	0.074**	0.156***	0.089**	0.223***
	(0.035)	(0.034)	(0.035)	(0.035)
Ref.: Low education				
Medium education	0.228***	0.061**	0.270***	0.044
	(0.031)	(0.030)	(0.032)	(0.031)
High education	0.210***	-0.003	0.282***	-0.075*
	(0.044)	(0.041)	(0.043)	(0.042)
Age in years	-0.790	-2.988***	-1.138	-2.383***
	(0.755)	(0.726)	(0.750)	(0.734)
Age squared	0.892	3.193***	1.413	3.178***
	(0.882)	(0.847)	(0.873)	(0.853)
Monthly income/100	0.011***	0.000	0.013***	0.024***
	(0.001)	(0.001)	(0.001)	(0.001)
Weekly working hours	0.002	0.001	0.008***	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Heavy weight	-0.079***	-0.031	-0.080***	-0.149***
	(0.028)	(0.027)	(0.027)	(0.027)
Smoke, dust, noise, and cold	-0.212***	-0.149***	-0.145***	-0.075***
	(0.028)	(0.027)	(0.028)	(0.027)
Night-/shiftwork	-0.129***	-0.149***	-0.192***	0.006
	(0.026)	(0.025)	(0.026)	(0.026)
N	11660	11660	11660	11660

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
The dependent variables are 4-point Lickert scales on 4 job satisfaction dimensions.
Robust standard errors are used. Standard errors under coefficients.
* Denotes significant at 10 percent level.
** Denotes significant at 5 percent level.
*** Denotes significant at 1 percent level.

In Table 14 we additionally control for the estimated percentage of males. When we do control for percentage of males the coefficients of P_i turn negative significant for overall satisfaction and satisfaction with contents of tasks and remains positive significant for the satisfaction with work climate. The effect remains positive significant for income satisfaction. Apart for the satisfaction with work climate, the coefficients for the estimated percentage of males enters every regression positive and significant. For

satisfaction with work climate the coefficient is negative but not significant. Thus Table 14 supports the results from Table 13 for the satisfaction with work climate and income but not the results for overall satisfaction and satisfaction with contents of tasks. Again, we report these estimates with caution because of the multicolinearity problem that we previously mentioned.

Table 14: Job satisfaction and occupational stereotypes: men III

Dependent variables:	Overall	Work climate	Tasks	Income
Index: Stereotypes *P*	0.009	0.190***	-0.115**	0.284***
	(0.053)	(0.051)	(0.052)	(0.052)
Share of males	0.131	-0.070	0.413***	-0.123
Ref.: Low education				
	(0.083)	(0.078)	(0.082)	(0.079)
Medium education	0.226***	0.062**	0.264***	0.046
	(0.031)	(0.030)	(0.032)	(0.031)
High education	0.206***	-0.001	0.268***	-0.071*
	(0.044)	(0.041)	(0.044)	(0.043)
Age in years	-0.821	-2.973***	-1.237*	-2.357***
	(0.755)	(0.726)	(0.750)	(0.734)
Age squared	0.938	3.170***	1.557*	3.138***
	(0.882)	(0.847)	(0.872)	(0.854)
Monthly income/100	0.011***	0.001	0.012***	0.025***
	(0.001)	(0.001)	(0.001)	(0.001)
Weekly working hours	0.002	0.001	0.007***	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Heavy weight	-0.076***	-0.033	-0.071**	-0.152***
	(0.028)	(0.027)	(0.027)	(0.028)
Smoke, dust, noise, and cold	-0.215***	-0.148***	-0.153***	-0.073***
	(0.028)	(0.027)	(0.028)	(0.027)
Night-/shiftwork	-0.128***	-0.150***	-0.188***	0.005
	(0.026)	(0.025)	(0.026)	(0.026)
N	11660	11660	11660	11660

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
The dependent variables are 4-point Lickert scales on 4 job satisfaction dimensions.
Robust standard errors are used. Standard errors under coefficients.
* Denotes significant at 10 percent level.
** Denotes significant at 5 percent level.
*** Denotes significant at 1 percent level.

5.3 2SCML estimates

One of our greatest concerns with the results thus far is that we implicitly assume that the job choice of an individual is exogenous. Such an assumption is far from reality, as

individuals choose their jobs as a result of their tastes or abilities or the hiring decisions of employers. In our case, it is particularly likely that people who decide to perform a job related to stereotypes of the opposite gender can cope far better with the negative effects that arise from stereotyping than can individuals who refuse to perform such a job. As a result, we cannot assume that P_i is an exogenous regressor in equation (4).

For this reason we apply a IV regression as described in equation (6). Table 15 provides the results for women. At the bottom of the table we report the z-statistics of θ, which indicate whether P_i is endogenous or not. The z-value is 1.57 for overall satisfaction, 3.00 for satisfaction with work climate, 1.90 for satisfaction with contents of tasks, and 0.93 for income satisfaction. We have to reject the hypothesis of P_i being endogenous for the estimates for satisfaction with work climate, contents of tasks. Only with respect to overall satisfaction and income satisfaction do we not find that θ is significant at the 10 percent level. However, the z-value is quite close to the critical value of 10 percent for overall satisfaction.

Table 15: Job satisfaction and occupational stereotypes: women (2SCML)

Dependent variables:	Overall	Work climate	Tasks	Income
Index: Stereotypes *P*	-2.308	-4.492*	-2.979	-1.08
	(1.985)	(2.31)	(2.076)	(1.5)
Coef. Instrument	0.863**	0.863**	0.863**	0.863**
	(0.287)	(0.287)	(0.287)	(0.287)
z-statistic: θ	1.57	3.00	1.90	0.93
F-statistic: first stage	9.04	9.04	9.04	9.04
N	7336	7336	7336	7336

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
The dependent variables are 4-point Lickert scales on 4 job satisfaction dimensions.
Adjusted standard errors are used. Standard errors under coefficients.
Further controls are education, age, monthly income, working hours
* Denotes significant at 10 percent level.
** Denotes significant at 5 percent level.
*** Denotes significant at 1 percent level.

In addition, we report the first stage coefficient of our instrument and the first stage F-value at the bottom of the table. The coefficient of the first stage is positive, indicating that women who live in a region with more stereotypically male jobs are significantly more likely to choose a stereotypically male job. The first stage F-value is

about 9.04. Staiger and Stock (1997) propose an F-value of 10 as rule of thumb for avoiding problems of weak instruments. Our F-value of 9.04 is only slightly below 10. The first row of the table provides the estimates of P_i. The estimation results show the same signs that we obtained in the classical ordered probit estimation of Table 7, but the coefficients and standard errors blow up as we estimate P_i with less precision. The only coefficient that remains significant at the 10 percent level is the negative effect on satisfaction with work climate.

Table 16 reports the results for men. The z-statistics for θ are 4.17 for overall satisfaction, 2.95 for satisfaction with work climate, 1.81 for satisfaction with contents of tasks and 1.52 for income satisfaction. All values—apart from income satisfaction—indicate that we have to reject the hypothesis that P_i is exogenous under the assumption that our instrument is valid. Moreover, our instruments show the expected direction and our F-statistic is about 13.23—a value above 10. In contrast to the estimates in Table 11 where the effect was negative for overall satisfaction and the satisfaction with contents of tasks, all coefficient values of P_i are positive. However, as for women, the effect remains significant only for satisfaction with work climate.

Table 16: Job satisfaction and occupational stereotypes: men (2SCML)

Dependent variables:	Overall	Work climate	Tasks	Income
Index: Stereotypes *P*	3.732	2.64**	1.595	1.475
	(2.51)	(1.301)	(1.274)	(1.006)
Coef. Instrument	0.737***	0.737***	0.737***	0.737***
	(0.203)	(0.203)	(0.203)	(0.203)
z-statistic: θ	4.17	2.95	1.81	1.52
F-statistic: first stage	13.23	13.23	13.23	13.23
N	11660	11660	11660	11660

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
The dependent variables are 4-point Lickert scales on 4 job satisfaction dimensions.
Adjusted standard errors are used. Standard errors under coefficients.
Further controls are education, age, monthly income, working hours
* Denotes significant at 10 percent level.
** Denotes significant at 5 percent level.
*** Denotes significant at 1 percent level.

As previously mentioned, our instrumental variable estimation allows us to identify only the LATE for a sub-population of individuals restricted in their job choices

because of the industrial structure within their region. We argue that these individuals are less likely to be in their jobs because they particularly favor stereotypically female or male jobs and that they did not choose their jobs because they were especially well prepared to cope with the possible negative effects of gender-specific stereotypes.

5.4 Sensitivity analysis

This section provides a sensitivity analysis for different sub-populations of our sample. As already mentioned, the biggest concern in estimating the effect of occupational stereotypes on job satisfaction is that individuals in different jobs are likely to have different characteristics and hold their jobs for different reasons. As a result, occupational stereotypes have different effects on individuals in different jobs. As it is nearly impossible to find an instrument or a natural experiment that induces a random assignment of individuals into their jobs, this section provides a sensitivity analysis in which we examine different sub-samples for which we have information about the individual's job choices. In particular, our data set contains information about individuals who changed their jobs and about the reasons for their job changes.

Tables 17 and 18 present results for two groups of individuals. The first group contains individuals who changed their jobs to earn more, to perform more interesting tasks, or to have more personal responsibilities. The second group of individuals contains individuals who were displaced or laid off from their old jobs or who suffered health problems and remain at their former jobs. Both groups have their jobs for very different reasons: The first group contains voluntary movers, who are likely to have considered the effects of occupational stereotypes before the job change yet still chosen the job they hold. The second group holds their jobs because they were forced to take that job by an exogenous event. Both groups of individuals are likely to experience the negative or positive effects of stereotyping in fairly different ways.

Table 17 presents the results for women. The first part presents the results for the voluntary and involuntary movers without controls for unpleasant working conditions. The second part presents the results with such controls. Without controls for unpleasant working conditions, the results for voluntary movers mimic the results for women

in Table 7, with the negative effect of P_i on overall satisfaction now even significant. When we now control for unpleasant working conditions, the effects become insignificant, apart from the effect for income satisfaction. For women who changed jobs involuntarily, we find positive effects for all specifications—a sharp contrast to the former results. However, no effect is significantly different from zero, and the sample size is only around 400. The effects are similar whether we control for unpleasant working conditions or not.

Table 18 presents the results for men. For voluntary movers and without controls for unpleasant working conditions, we find a negative insignificant effect of P_i on overall satisfaction, a positive but insignificant effect on satisfaction with work climate, a negative significant effect on satisfaction with contents of tasks and a positive significant effect for income satisfaction. If we control for unpleasant working conditions most of the effects—apart from satisfaction with income—turn positive: significant for satisfaction with work climate and income but insignificant for the other two satisfaction categories. For involuntary movers we find no significant effect, and the effect of P_i on work climate is now negative. The effects for the first group of voluntary movers are similar to those in Table 11 and Table 13. Surprisingly, the effects are very different for involuntary movers. However, the effects are estimated on a very small sample and insignificant in all specifications.

Table 17: Job satisfaction and occupational stereotypes: women (job movers)

Voluntary movers				
Dependent variables:	Overall	Work climate	Tasks	Income
Without controls				
Index: Stereotypes *P*	-0.273**	-0.223*	-0.370***	0.129
	(0.135)	(0.134)	(0.137)	(0.141)
With controls				
Index: Stereotypes *P*	-0.060	-0.065	-0.118	0.233
	(0.146)	(0.150)	(0.144)	(0.148)
Observations:	883	883	883	883
Involuntary movers:				
Dependent variables:	Overall	Work climate	Tasks	Income
Without controls				
Index: Stereotypes *P*	0.195	0.039	0.147	0.220
	(0.205)	(0.188)	(0.188)	(0.205)
With controls				
Index: Stereotypes *P*	0.234	0.080	0.188	0.233
	(0.209)	(0.190)	(0.193)	(0.209)
Observations:	480	480	480	480

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
The dependent variables are 4-point Lickert scales on 4 job satisfaction dimensions.
Robust standard errors are used. Standard errors under coefficients.
Regression includes all control variables.
* Denotes significant at 10 percent level.
** Denotes significant at 5 percent level.
*** Denotes significant at 1 percent level.

Table 18: Job satisfaction and occupational stereotypes: women (job movers)

Voluntary movers				
Dependent variables:	Overall	Work climate	Tasks	Income
Without controls				
Index: Stereotypes *P*	-0.072	0.038	-0.189**	0.211***
	(0.075)	(0.071)	(0.076)	(0.072)
With controls				
Index: Stereotypes *P*	0.114	0.145*	-0.040	0.277***
	(0.081)	(0.077)	(0.084)	(0.079)
Observations:	2343	2343	2343	2343
Involuntary movers:				
Dependent variables:	Overall	Work climate	Tasks	Income
Without controls				
Index: Stereotypes *P*	-0.063	-0.108	0.100	0.132
	(0.120)	(0.120)	(0.122)	(0.114)
With controls				
Index: Stereotypes *P*	0.024	-0.053	0.177	0.185
	(0.130)	(0.129)	(0.133)	(0.123)
Observations:	882	882	882	882

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
The dependent variables are 4-point Lickert scales on 4 job satisfaction dimensions.
Robust standard errors are used. Standard errors under coefficients.
Regression includes all control variables.
* Denotes significant at 10 percent level.
** Denotes significant at 5 percent level.
*** Denotes significant at 1 percent level.

6 Conclusion

This paper has provided evidence of an empirical relation between occupational stereotypes and job satisfaction. Women appear less satisfied in stereotypically male occupations than in stereotypically female occupations. This disparity in satisfaction is most pronounced for satisfaction with work climate and satisfaction with the contents of tasks. In contrast, income satisfaction is higher for women in stereotypically male jobs. Meanwhile, men report higher satisfaction values in stereotypically male jobs, in particular with respect to their work climate.

Even if stereotyping is persistent in the labor market and affects the subjective well-being of individuals, classical economic theory does not provide a direct link between occupational stereotypes and job satisfaction. However, as we mentioned in the introduction a recent influential literature incorporating the concept of identity into an economic framework hypothesizes a structural relationship between utility payoffs and different kinds of jobs. Akerlof and Kranton (2000)[4] state that individuals are assigned to different social categories and that these social categories are associated with different attributes and prescribed behaviors. If individuals violate these behaviors, they could suffer identity losses. In contrast, if they behave in line with the prescriptions of their social category, they might gain utility.

As our results show, occupations and tasks are also associated with social gender categories indicating either male or female attributes or behavior, and thus follow such categorical prescriptions. In particular we show that jobs containing tasks such as driving vehicles, maintaining machines, or doing calculations and bookkeeping are more likely to be considered inappropriate for women, whereas tasks such as cleaning, care-giving, or teaching are considered more appropriate for women.

Moreover, the paper shows that occupational stereotypes affect different dimensions of job satisfaction for women and men in different ways. We show that women are less satisfied with their work climate and contents of tasks but are more satisfied with their income in stereotypically male jobs. As these results hold even when we

[4]The theory of Akerlof and Kranton (2000) is not independent of earlier theories on discrimination, especially by co-workers, such as by Becker (1971).

control for working hours, unpleasant working conditions, and income (as well as for different sub-populations), we argue that the negative relationship between job satisfaction and stereotypically male jobs cannot be exclusively explained by women favoring different bundles of work characteristics than men—an explanation brought up by Bender et al. (2005) to explain the gender way gap. Likewose the theory of Clark (1997) about differences in expectations might not fully explain why women are less satisfied with their work climate in stereotypically male jobs and men are more satisfied with their work climate in stereotypically male jobs. Especially because it is not likely that women (men) have high expectations of a good work climate in male (female) jobs which are disappointed afterwards. Nevertheless, the negative effect of male occupational stereotypes on women's satisfaction with their work climate is robust for a variety of empirical specification, whereas we men are more satisfied with their work climate in stereotypically male jobs. We argue that such a relationship is rather in line with Akerlof and Kranton (2000), who argue that deviating from one's social category affects not only one's own sense of self but also the identity of others nearby. Therefore, their theory suggests that women and men should have different feeling about their work climate within stereotypically male or female jobs.

As our results suggest that factors such as prejudice and gender-specific stereotypes affect the utility outcomes of women and men, we argue that social influences other than income and other observable job characteristics (such as, for example, working hours), are very likely to affect individual's choice of a job. Such social influences, however, are very difficult for policy makers to change and might explain the persistence of gender job segregation in Western countries. Moreover, social occupational stereotypes might induce inefficient allocations of workers to jobs and might induce welfare losses.

A Tables

Table 19: Descriptive statistics: Women

Variable	Obs	Mean	Std. Dev.
Job satisfaction:			
Overall	7336	3.226	0.631
Work climate	7336	3.267	0.688
Tasks	7336	3.201	0.655
Income	7336	2.793	0.710
Education:			
Medium education	7336	0.565	0.496
High education	7336	0.154	0.361
Personal and job characteristics:			
Age in years	7336	38.867	11.523
Monthly income (DM)	7336	2412.786	1180.936
Working hours	7336	32.467	10.030
Heavy weight	7336	0.120	0.325
Smoke, dust, noise and cold	7336	0.219	0.413
Night-/shiftwork	7336	0.169	0.375

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.

Table 20: Descriptive statistics: Men

Variable	Obs	Mean	Std. Dev.
Job satisfaction:			
Overall	11660	3.223	0.585
Work climate	11660	3.208	0.671
Tasks	11660	3.218	0.599
Income	11660	2.895	0.637
Education:			
Medium education	11660	0.672	0.469
High education	11660	0.169	0.375
Personal and job characteristics:			
Age in years	11660	40.95	11.445
Monthly income (DM)	11660	3840.39	1310.516
Working hours	11660	41.13	6.899
Heavy weight	11660	0.341	0.474
Smoke, dust, noise and cold	11660	0.504	0.500
Night-/shiftwork	11660	0.249	0.433

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.

Table 21: Tasks: Women

Tasks	Mean	Std. Dev.
Equip machines	0.038	0.190
Control machines	0.107	0.309
Maintain machines	0.013	0.114
Driving vehicles	0.028	0.164
Restaurate	0.007	0.081
Breed, plant	0.013	0.112
Gaining commodities	0.002	0.040
Prepare food etc.	0.063	0.243
Work on buildings	0.009	0.093
Serve, accommodate	0.068	0.252
Cleaning	0.142	0.350
Abolish litter	0.104	0.305
Load, pack	0.094	0.292
Sort, archive	0.208	0.406
Analyze, research	0.088	0.283
Construct paint	0.047	0.211
Buy, sell, advertise	0.281	0.450
Writing	0.442	0.497
Calculate bookkeeping	0.185	0.388
EDV tasks	0.218	0.413
Guard	0.016	0.125
Work with laws	0.087	0.282
Teaching	0.158	0.365
Care-giving	0.138	0.345
Publish	0.052	0.222
Supervise personell	0.098	0.298
Coordinate	0.198	0.399

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
Share of females who indicated performing the respective tasks.

Table 22: Tasks: Men

Tasks	Mean	Std. Dev.
Equip machines	0.191	0.393
Control machines	0.254	0.435
Maintain machines	0.204	0.403
Driving vehicles	0.207	0.405
Restaurate	0.077	0.266
Breed, plant	0.019	0.137
Gaining commodities	0.012	0.110
Prepare food etc.	0.081	0.273
Work on buildings	0.120	0.325
Serve, accommodate	0.013	0.112
Cleaning	0.021	0.145
Abolish litter	0.068	0.253
Load, pack	0.096	0.294
Sort, archive	0.096	0.294
Analyze, research	0.156	0.363
Construct paint	0.100	0.300
Buy, sell, advertise	0.159	0.366
Writing	0.292	0.455
Calculate bookkeeping	0.174	0.379
EDV tasks	0.180	0.384
Guard	0.058	0.234
Work with laws	0.139	0.346
Teaching	0.148	0.355
Care giving	0.021	0.144
Publish	0.061	0.239
Supervise personell	0.183	0.386
Coordinate	0.287	0.453

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
Share of males who indicated performing the respective tasks.

Table 23: Estimates for stereotype index.

Dependent variable: Occupational sex stereotypes			
Male tasks		Female tasks	
Equip machines	0.062***	Serve, accomodate	-0.499***
	(0.019)		(0.024)
Control machines	0.198***	Breed, plant	-0.099***
	(0.016)		(0.036)
Maintain machines	0.321***	Cleaning	-0.143***
	(0.019)		(0.025)
Driving vehicles	0.238***	Sort, archive	-0.085***
	(0.016)		(0.013)
Restaurate	0.312***	Analyse, research	-0.035***
	(0.028)		(0.013)
Gaining commodities	0.586***	Construct, paint	-0.084***
	(0.071)		(0.016)
Prepare food	0.036*	Buy, sell advertise	-0.182***
	(0.021)		(0.010)
Work on buildings	0.294***	Writing	-0.159***
	(0.023)		(0.010)
Abolish litter	0.046**	EDV tasks	-0.113***
	(0.023)		(0.010)
Load, pack	0.104***	Work with laws	-0.010
	(0.019)		(0.012)
Calculate, bookkeeping	0.037***	Teaching	-0.094***
	(0.010)		(0.012)
Guard	0.194***	Care-giving	-0.331***
	(0.027)		(0.017)
Publish	0.002	Coordinate	-0.024**
	(0.016)		(0.011)
Supervise personell	0.053***		
	(0.013)		

Note: All data are drawn from the BIBB/IAB Strukturerhebung 1991/92.
The dependent variables are 5 point lickert of occ. sex sterotypes.
The highest value denotes a sterotype male the lowest a sterotype female job.
Regression includes all observations with no missing values on tasks.
Robust standard errors are used. Standart errors under coefficients.
* Denotes significant at 10 percent level.
** Denotes significant at 5 percent level.
*** Denotes significant at 1 percent level.

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